Groundbreaking for the SYSTEMS ENGINEERING BUILDING and Dedication of the AIRCRAFT NOISE REDUCTION LABORATORY

June 27, 1974

Langley Research Center
Hampton, Virginia

Program

Presiding ..... Dr. Edgar M. Cortright
Director, Langley Research Center

National Anthem ..... United States Continental Army Band
CWO Byron Smith, U.S.A., Director

Welcome and Introductions ..... Dr. Edgar M. Cortright

Remarks ..... Honorable Frank E. Moss
United States Senate

AIRCRAFT NOISE AND THE ENVIRONMENT

Remarks and Introduction of
the Honorable John W. Wydler ..... Honorable Thomas N. Downing
U.S. House of Representatives

Remarks ..... Honorable John W. Wydler
U.S. House of Representatives

SOLAR ENERGY USE

Introduction of the Honorable H. Guyford Stever
and Dr. Rocco A. Petrone ..... Dr. Harrison H. Schmitt
Assistant Administrator for
Energy Programs, NASA

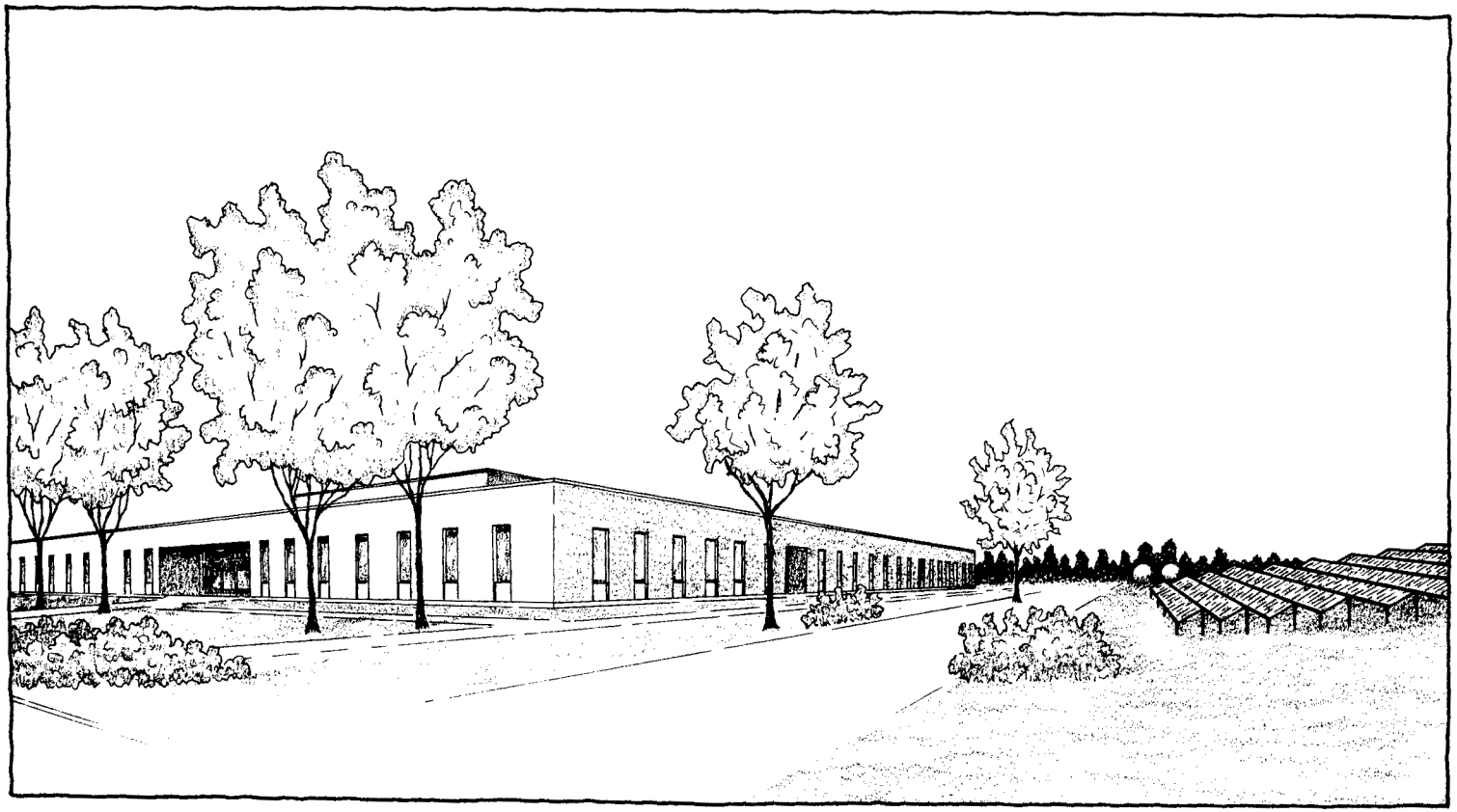
Remarks ..... Honorable H. Guyford Stever
Director, National Science
Foundation

Remarks ..... Dr. Rocco A. Petrone
Associate Administrator, NASA

Ground-breaking and
Ribbon Cutting Ceremonies ..... Dr. Edgar M. Cortright

Tour of the Aircraft Noise Reduction Laboratory

Refreshments



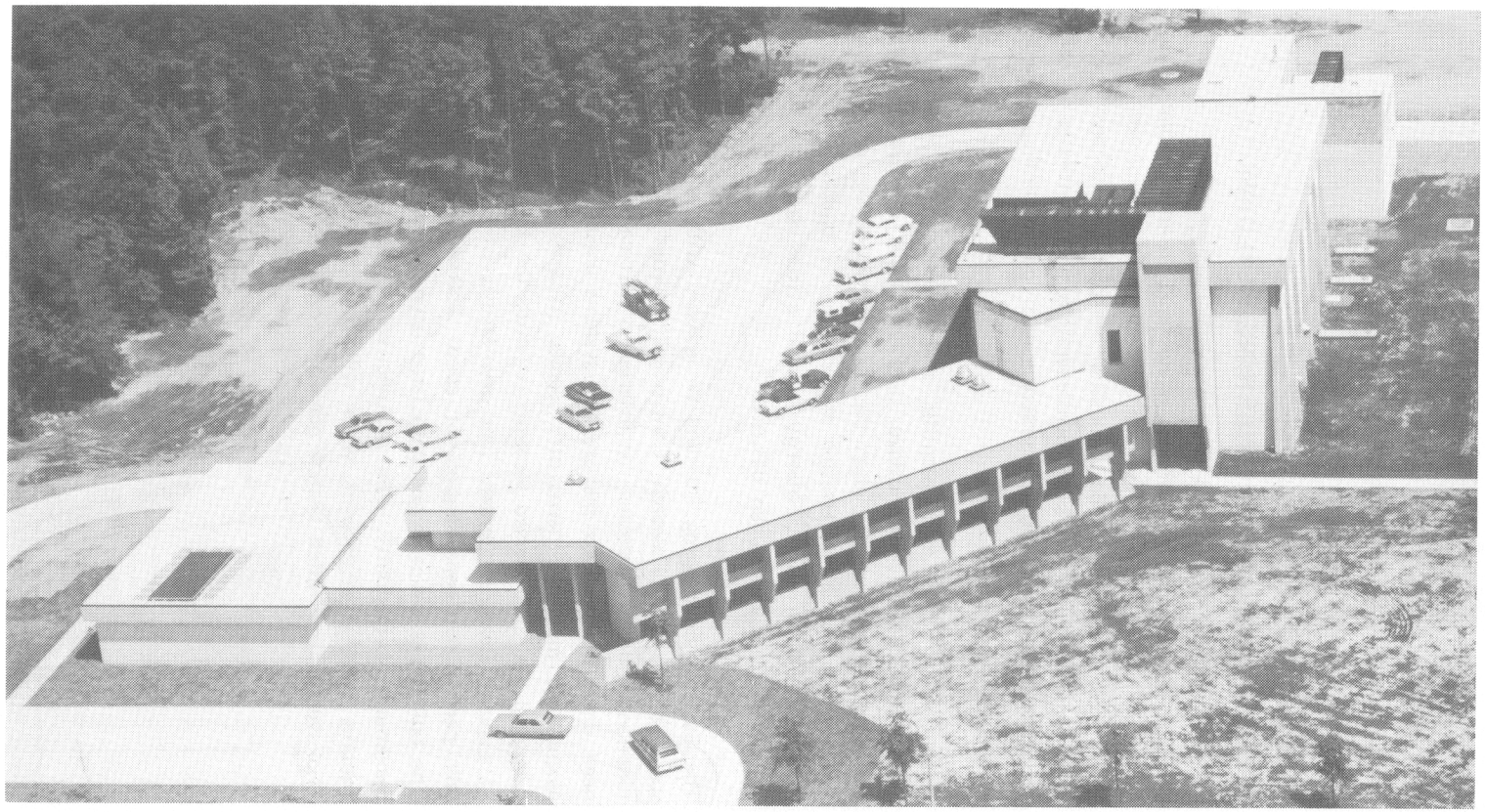
Systems Engineering Building with Solar Collectors

SYSTEMS ENGINEERING BUILDING

The Systems Engineering Building is designed to utilize solar energy to reduce energy consumption for environmental control and, at the same time, demonstrate the feasibility of solar heating and cooling in commercial buildings. Early demonstration will contribute to early implementation in nationwide practice with corresponding increased energy savings.

Solar energy is the most plentiful energy resource on earth. If a means can be found to utilize this energy to meet current and projected energy demands, then the more versatile but non-renewable fuels can be conserved. Heating and cooling of buildings is a prime candidate for solar energy application because relatively low-temperature energy can be used.

The Systems Engineering Building when used with other appropriate space at Langley Research Center will permit a more effective functional interface between engineering and research personnel. This need directly relates to the growing systems engineering requirement essential to meet the needs of research. At present, the engineering personnel are at dispersed locations in both the East and West areas of Langley Research Center. This new facility of 53,000 square feet will permit the consolidation of about 350 engineering personnel. The building is basically one with large open spaces that provide the maximum of flexibility. The building will be supported on timber friction piles. The exterior walls will be masonry blocks with a brick veneer and tinted bronze glass in bronze aluminum frames.



Aircraft Noise Reduction Labortory

AIRCRAFT NOISE REDUCTION LABORATORY

The Aircraft Noise Reduction Laboratory will provide research capability for directly attacking the problems of noise generated by aircraft, including fundamental research in the generation and physical measurement of noise, human reactions to noise, and techniques for noise reduction.

The facility has been designed for research directed toward alleviation of the aircraft noise problem with particular emphasis on communities near airports. Features have been provided for research on both the physical and subjective aspects of the problem. Unique test cells and associated equipment provide capabilities for noise reduction studies of aircraft propulsion system components (inlet and fan discharge ducts, propellers, helicopter rotors, jets, etc.) and for subjective judgment studies of recorded and synthesized aircraft noises. The facility will provide increased capabilities for basic and applied research in the following areas: evaluation of materials for acoustic treatment of ducts with high speed air flows; evaluation of various duct configurations under realistic airflow conditions; reduction of engine noise; reduction of helicopter rotor and propeller noise under simulated flight conditions and with asymmetrical load distributions; synthesizing of noise signatures from proposed aircraft and aircraft modifications for subjective studies; and performance of subjective listening judgment tests.

The Aircraft Noise Reduction Laboratory is designed to accommodate experiments of the basic properties of noise and the practical applications of noise reduction procedures. Four major areas are provided in the laboratory. The physics area will be concerned with basic physical measurements on materials used in engine inlet and exhaust environments. The applications area will provide the facilities for testing the application of noise reduction materials, devices and techniques envolved in the physics area and provided through research grants and contracts. It will include both an anechoic room and a reverberation room with a quiet air flow system for simulating forward speed effects. The simulation area will be concerned with the reaction of people to noise. Two special rooms, the exterior effects simulation laboratory and the interior effects simulation laboratory, will provide capabilities for research on human reactions to noise. The engineering support area will be used by engineers and scientists working in the facility.

The Aircraft Noise Reduction Laboratory provides facilities having the capability for making basic physical measurements. the application of such measurements to the development of noise reduction devices; and simulation laboratories for determination of the reaction of people to the modified noise levels of aircraft.

Aerial View of West Area of Langley Research Center